

ACUTE SUPPURATIVE PANCREATITIS.

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FROM the interest and increasing attention devoted during the past few years to the subject of pancreatitis many practical and important facts have been added to our knowledge of the disease, particularly as regards its etiology and pathology.

The principal and direct cause of the infection is the entry of bacteria into the gland, and the usual route is from the duodenum by the way of the pancreatic duct. It is an ascending infection due, secondarily, to lesions in the duodenum, and the acuteness of the resulting inflammation depends rather on the degree of infection and not on the nature of the exciting agent. Thus the most acute infection when established is followed by the acute hæmorrhagic form, the less acute provokes suppuration or gangrene, while the still less active agent causes sclerosis of the pancreas. Clinically, the most rapid and fatal form is the acute hæmorrhagic; the gangrenous and suppurative forms are less so, while the least dangerous is the chronic interstitial form. Hæmorrhage, suppuration, necrosis, and sclerosis are closely related to each other, are due to a common cause, and mostly represent a varying degree of infection.

A mild catarrhal inflammation of the duct may exist to start with, and continue for some time; later on, owing to some determining cause, as gall-stone, pancreatic calculus, abuse of alcohol, etc., the inflammation assumes an acute form and hæmorrhage, suppuration, or gangrene of the gland suddenly follows.

The treatment is that of a septic infection. Its indications

are strictly surgical, and by surgery alone may we hope for success in these otherwise hopeless cases. In the acute cases, incision, removal of the septic foci, and packing, together with free drainage, is called for; in subacute cases incision and drainage of the abscess are indicated; and in the chronic form—which has been shown to be frequently associated with gall-stone—through cholecystotomy the pancreatic ducts are indirectly drained and the inflammation subsides.

In meeting these indications, we are as yet handicapped by our exceedingly limited ability of diagnosis, and we still await the discovery of symptoms characteristic of the disease. As acute pancreatitis is more frequent than formerly supposed, and, as in acute cases a fairly definite clinical picture has been depicted, these facts should lead us to recognize the disease more frequently.

The possibility of making a correct diagnosis has been demonstrated in some instances; and it is the object of this brief paper to record a case in which the diagnosis was made before operation, and the treatment was followed by success.

O. F., forty-one years of age, salesman, was admitted, May 8, 1901, to the New York Hospital. He had been a steady consumer of alcohol for twenty years, and for the past seven years has been a heavy drinker. About every six months has been accustomed to going on sprees lasting anywhere from three to six weeks, and with the exception of these periods has always enjoyed excellent health. Five years ago, after a spree, he had an attack of severe epigastric pain accompanied with bilious vomiting, the attack lasting three days, and was relieved by medication. Three years ago, after a debauch, he had a similar attack, which yielded to medical treatment. Last January, after a spree lasting two weeks, he was again seized with sudden epigastric pain accompanied with bilious vomiting; the attack lasting this time about a week; but he was unable to return to work for about three weeks. In this attack the pain was more severe, and radiated to the left side and under the left shoulder. About the middle of April another debauch followed, lasting about two weeks, and eight days previous to admission he was suddenly seized with

epigastric pain and vomiting. The vomiting was frequent, of a bilious character, and was increased by the ingestion of food or drink, and after a week's duration it subsided. The pain was, however, more severe than in the previous attacks and limited to the epigastric region, radiating at times laterally, but it steadily increased, and finally extended over the entire abdomen. Two days before admission he noticed that the belly was swollen below the ribs and that his clothes were too small for him. No history of chills or fever; bowels constipated.

Owing to the failure of the treatment, which had been successful in the previous attacks, he applied for admission to the hospital.

The patient was a man of medium height and very fat, with a decided septic appearance. His tongue was coated with dark brownish fur; no jaundice. Heart and lungs negative. Abdomen distended, with marked prominence in the left epigastric region. General abdominal tenderness on palpation, most marked in left epigastrium, where belly wall is somewhat rigid. In this region is a mass about the size of a cocoanut, sharply defined, tense, and tender on pressure. It is situated chiefly above and to the left of the umbilicus, and extends a short distance to the right of the median line. It is dull on percussion; above and over the region of the stomach light percussion gives a tympanitic note; below the mass, percussion is tympanitic also. The tumor apparently lies between the stomach and transverse colon. Deep percussion over the stomach is dull; the dulness extends into the left hypogastrium, and downward is continuous with that over the tumor. Owing to the fat belly wall no tumor could be felt behind the stomach, but there was a well-marked sense of resistance. Liver dulness small; free edge not to be felt. Skin over back and on the side of the abdomen red and blistered in spots from mustard paste applied before admission. Temperature, 101.8° F.; pulse, 100, and weak; respiration, 36. Urine, clear, acid, 1031, no sugar or albumen. Leucocytosis, 40,000.

The diagnosis arrived at was acute suppurative pancreatitis. The patient refused operation.

May 13, patient has grown steadily worse, very septic; abdominal pain has increased, is constant, and at times there are very sharp paroxysms. Abdomen is about the same; bowels have

been moved daily since admission. Temperature, 102.4° F.; pulse, 136. Leucocytosis, 36,000.

Operation, 11 P.M. Ether narcosis; thirty ounces of decimal salt solution injected in vein of right arm. Ethyl chloride spray over site of tumor, and peritoneal cavity opened by a five-inch incision through left rectus muscle, and about twenty ounces of a brownish seropurulent fluid gushed out. It came from a cavity bounded behind by the lower edge of the stomach and gastrocolic omentum and upper border of transverse colon, the cavity being shut off laterally by adhesions from the general peritoneum. After mopping out the cavity, fat necrosis was observed in the gastrocolic omentum, the nodules varying from a pinhead to a pea in size. Behind could be felt a large mass posterior to the stomach and extending to the left, and by blunt dissection an opening was made into the bursa omentalis. This was followed by the discharge of over a quart of reddish-brown, thin pus containing considerable amount of white flakes and bits of necrotic fats. Opening enlarged sufficiently to admit two fingers, and the swollen pancreas could be distinctly felt lying to the back of a large cavity. A Ferguson speculum was then introduced through the opening, and with the aid of an electric hand light a circumscribed view of the pancreas was obtained. It was swollen, dark red in color, and here and there between the inflamed lobules could be seen areas of a yellowish-white color. The abscess-cavity was irrigated thoroughly and gently with salt solution, a rubber drainage tube three-fourths of an inch in diameter and covered with iodoform gauze introduced into the cavity; the smaller cavity packed with sterilized gauze, large dressing of sterilized gauze and binder over all.

Patient decidedly weaker at the end of operation. Pulse 160. Ordered strychnine one-thirtieth of a grain hypodermically, and a stimulating enema of hot salt solution and extract of coffee.

May 14, patient somewhat improved. Abdominal pain decidedly less, pulse still rapid and weak. There is a profuse discharge of thin, brownish material from abdominal wound necessitating frequent dressing. Tympanites increased. During the next two weeks there was a gradual general improvement. Pulse was less rapid and stronger, the temperature lower, and the tympanites gradually subsiding. The discharge from the wound, however, was very profuse, and for the space of four inches around

the wound the skin became excoriated and inflamed in spite of the constant use of boric acid ointment. The edges of the wound, and especially the subcutaneous fat, became necrotic, and was of a greenish-black color.

On May 16 drainage tube removed, but was replaced on the 20th by a smaller one. The cavity was irrigated several times daily with salt solution, and considerable necrotic fats and blood-clots were washed out.

May 26, tube removed and drains of sterilized gauze substituted.

June 1, discharge contains large amount of faecal matter.

June 8, general condition of patient not so good; is weaker; is delirious at nights; refuses to take food, and vomits several times daily moderate amount of greenish fluid. Stomach washed out every three hours, and through tube are introduced whiskey, one-half ounce, two raw eggs beaten up in eight ounces of peptonized milk. Nutrient enemata, t. i. d. This method of nourishment was resorted to until June 24, when the patient began to take food voluntarily. The wound is slowly healing, the discharge is less, and is principally faecal matter; very little pus.

July 1, sits up in bed an hour daily. Wound three by one and one-half inches; at bottom can be seen small opening, which discharges faecal matter.

July 14, out of bed. Fistula much smaller, discharge less. From this time the patient's history is that of steady convalescence and with slow decrease in the size of the fistula, and on September 10 he was discharged with wound completely healed.

May 15, 1902, patient is well and strong, and has gained sixty-five pounds since discharge from the hospital. Has a good appetite; bowels regular; stools of normal color. Two inches to the left and above the umbilicus is a scar five inches long and two inches wide, scar is firm, no protrusion on coughing. Patient wears abdominal belt.

It may be of interest to add some notes made by Dr. A. S. Chittenden (house surgeon) of experiments made on the secretions of the wound taken a few days after operation.

NOTES OF EXPERIMENTS ON SECRETIONS OF PANCREATIC FISTULA. (FLANNIGAN.)

SUGAR (*Amylolytic*). About three ounces of purulent secretion from epigastric fistula collected and filtered.

The resulting cloudy fluid was alkaline in reaction to litmus.

A sufficient quantity of dilute solution of boiled starch was prepared, which gave the characteristic blue reaction when treated with solution of iodine.

In four test-tubes was placed an equal quantity of the dilute starch solution (temperature, 40° C.), and each was then treated successively, and about one minute apart, with five minims of the filtered secretion from the fistula.

The tubes were again treated in series, and about one minute apart with a solution of iodine.

Tube No. I gave the reaction (blue) for iodine (slightly impaired).

Tube No. II gave a purple color (erythrodextrin).

Tube No. III gave a cherry-red color (erythrodextrin).

Tube No. IV was colorless.

Upon boiling a portion of the contents of tube No. IV with Fehling's solution, the red oxides of copper appeared.

FATS (*Adipolytic*). Olive oil was shaken with ether and caustic soda, and the supernatant neutral ethereal solution of fat separated off. Evaporation left a fat neutral in reaction to litmus. To this was added a small amount of litmus and five minims of the prepared secretion from the fistula. The whole was kept warm, 40° C., for two hours, when the blue color of the litmus had gradually given place to red, showing the decomposition of neutral fat into glycerin and fatty acid.

PROTEIDS (*Proteolytic*). The white of an egg was chopped fine and mashed in running water. A sufficient quantity of this was placed in a test-tube covered with twenty cubic centimetres of water, to which five minims of chloroform had been added.

To this was added five cubic centimetres of the prepared secretion from the fistula. The test-tube was then kept in a thermostat of constant temperature of 38° C. for thirty-six hours. At the end of that time complete solution of the coagulated albumen had resulted. This milky solution upon dilution gave the biuret reaction. No tests for leucine or tyrosine were made.

The pathologist of the hospital, Dr. Biggs, also reported that the fluid removed at the operation responded to all tests for pancreatic juice.

Examination of two good sized masses of tissue found in fluid evacuated at operation showed necrotic pancreatic tissue.

Cultures of this material revealed the abundant presence of the *staphylococcus albus*.

REMARKS.

This was a case of acute pancreatitis with suppuration, and its rapid progress is unusual, for, as a rule, this variety is subacute and runs a slow course even when the onset is sudden. In this case the infection of the pancreas started from the duodenum, where, owing to the continued and at times the increased use of alcohol, gastroduodenitis existed.

The infection dates back probably to the time of the first attack of pain and vomiting, and it assumed the form of a simple catarrh of the ducts, which was aggravated and increased by the frequent spree, and finally resulted in a suppurative form of catarrh. From the continual ingestion of alcohol and the repeated spree, the pancreas was in a state of congestion with increased secretion, and, owing to the diminution of the caliber of the pancreatic ducts, there was a certain degree of retention of the pancreatic secretions and an increase of tension in the excretory ducts and alveoli. As a result, changes in the epithelial lining of the excretory ducts and alveoli took place, the epithelium of the ducts being destroyed in spots and the cells lining the alveoli undergoing a fatty degeneration. The bacteria present in the ducts were increased in number and degree of virulency and gaining access to the alveoli, suppuration of the degenerated epithelia followed, thus causing a true pancreatic abscess; or the bacteria penetrated the wall of the duct where the epithelial coat was destroyed and, gaining access to the periglandular tissue, produced a suppurative peripancreatitis. The abscess thus formed steadily increased in size, burrowed forward in the gland and perforated into the bursa omentalis, which then became a large abscess cavity. The infection evidently spread from here forward through the gastrocolic omentum and produced a localized, suppurative peritonitis, which was represented by the first abscess opened at the time of operation.

This existence of an intraperitoneal abscess secondary to

and with no direct communication with the abscess of the bursa omentalis is interesting and very unusual.

In arriving at the diagnosis in this case, I was assisted partly by the length of time—thirteen days—which had elapsed since the beginning of the last attack and in a greater degree by the presence of the tumor in the left epigastrium. Had I seen the patient at the beginning of the attack, a diagnosis would have been impossible, as the symptoms were those which accompany other diseases of the upper alimentary tract. As the bowels had been moved daily since admission, intestinal obstruction was excluded. The history of the previous attacks with no vomiting of blood or bloody stools, together with the fact that almost fourteen days had passed since the beginning of the last one, ruled out, in my mind, perforative inflammation of the stomach or duodenum, which, as a rule, are fatal in a few days. Gall-stone was excluded by the absence of jaundice and the pain being most intense over the left epigastrium. The most characteristic symptom was the presence of the tumor, which was apparently situated between the stomach and transverse colon, the usual location where pancreatic cysts present, and its dulness was continuous with the dulness developed on deep percussion over the stomach and extending into the left epigastrium. The presence of fever and rapid pulse and the very high leucocytosis suggested suppuration. Finally, the occurrence of the attack following directly upon a spree was of some importance to me, as in a case of suppurative pancreatitis seen some years ago, where the diagnosis was not made until after operation, the attack followed immediately after a debauch.

From the history of the attacks always following a spree; from the ability to exclude other affections whose symptoms in the beginning are the same in acute pancreatitis; and, finally, from the presence of the tumor over the site of the pancreas, made it possible to arrive at a diagnosis.

After the patient was anæsthetized, on palpation over the stomach a mass could be felt extending into the left hypogastrium, and it was considered to be connected with the tumor

which lay between the stomach and transverse colon. Owing to the prominence of the tumor in the left epigastrium, an anterior incision was employed, and it was evidently the better route of approach, as a posterior incision in the costovertebral angle would have failed to drain the intraperitoneal abscess. Owing to the weak condition of the patient, after opening and draining the omental bursa from the front, it was deemed safer not to prolong the operation by attempting drainage from behind. Perhaps it would have been better to have added a posterior incision, as it would have afforded better drainage, and would have been followed by a quicker recovery, as well as avoided the formation of a fæcal fistula; but, as mentioned above, the patient's condition was such as not to allow of any prolonged operative interference. The fæcal fistula was due to the mistaken zeal of one of the internes, who considered the drainage insufficient, and with every good intent substituted the rubber drain, and as a result fæcal material appeared in the discharge two days thereafter.

The healing of the abdominal wound was thus materially delayed, and but for this complication, the patient would have been discharged at least six weeks sooner.

On July 1, the pancreatic abscess was entirely healed, as at that time the discharge was mainly fæcal and contained no pus.

The pancreatic abscess in this case was evidently a single one, as is the rule of 60 per cent. of reported cases, and the damage to the gland through suppuration was of limited extent, as can be appreciated by the present condition of the patient. He has steadily gained in weight, his digestion is good, his stools are of a normal consistency and color, the urine contains no sugar, and the pancreas apparently functionates in a satisfactory manner.